

SPECIFICATION:

Please replace paragraph [0011] with the following amended paragraph:

[0011] A first aspect of the invention provides a method of forming a bond pad for use in a wirebond interconnection, comprising: depositing a first layer of bond pad material on a substrate; and depositing a second layer of bond pad material on the first layer, wherein the first layer has a higher ~~Young's Modulus~~ Young's Modulus of Elasticity than the second layer.

Please replace paragraph [0013] with the following amended paragraph:

[0013] A third aspect of the invention provides semiconductor device, comprising: a first layer formed on a substrate; and a second layer on the first layer, wherein the first layer of the bond pad has a higher ~~Young's Modulus~~ Young's Modulus of Elasticity than the second layer.

Please replace paragraph [0029] with the following amended paragraph:

[0029] As illustrated in Fig. 4, a first layer of a bond pad, or first bond pad layer 18 is deposited over at least a portion of the oxide layer 14. The first bond pad layer 18 conformally coats the via 16 within the oxide layer 14, and extends beyond the blueprint of the via 16. The first bond pad layer 18 may comprise TiAl_x , e.g., TiAl_3 , or other aluminum alloys having at least 2% titanium, 2% copper, 2% silicon, 2% tungsten, or other similar material. The ~~Young's Modulus~~ Young's Modulus of Elasticity of the material selected for the first bond pad layer 18 is about 100 GPa, or greater and a hardness of about 0.8 or greater. The first bond pad layer 18 may be sputter deposited onto the surface of the oxide layer 14 using a plasma vapor deposition (PVD) technique, or other similar technique, to a thickness of about 100-800nm.

Please replace paragraph [0030] with the following amended paragraph:

[0030] As illustrated in Fig. 5, a second layer of the bond pad, or second bond pad layer 20 is then deposited on the surface of the first bond pad layer 18, and may comprise aluminum, aluminum-copper alloys, aluminum-titanium alloys, or other similarly used materials. The second bond pad layer 20 is formed using a PVD process, or other similarly used process. The second bond pad layer 20 may be formed having a thickness of about 100-600nm. The first and second bond pad layers 18, 20 form a bond pad stack or bond pad 22, having a total thickness less than, or equal to 1200nm. It should be noted that the thickness of each of the first and second bond pad layers 18, 20 may be adjusted as needed. The bond pad 22 is electrically connected to the active region of the chip 10 through the metal lines and vias 13 within the metallization level 12. Customarily a bond pad comprises only a single layer of material, for example, primarily Al and its alloys. A single layer bond pad composed primarily of Al has a ~~Young's Modulus~~ Young's Modulus of Elasticity of about 88 GPa, or less than about 90 GPa, and a hardness of about 0.6 GPa. The present invention, however, replaces a portion of the conventional aluminum bond pad with the first bond pad layer 18 such that the total bond pad thickness required for a particular application is maintained, but the amount of aluminum is reduced. As mentioned above, the first bond pad layer 18 has a ~~Young's Modulus~~ Young's Modulus of Elasticity of about 100 GPa or greater, and a hardness of about 0.8 GPa. The higher ~~Young's Modulus~~ Young's Modulus of Elasticity and hardness makes the first bond pad layer 18 more resistant to the probe testing than the second bond pad layer 20. As a result, less of the bond pad 22 is removed during probe testing, therefore, sufficient bond pad material is still

present at the time of wirebonding. In addition, the ~~Young's Modulus~~ Young's Modulus of Elasticity of the first bond pad layer 18 increases the resistance of the wirebond interconnection (formed *infra* on the bond pad 22) to mechanical failure during mechanical tests performed on the wirebond interconnection.

Please replace paragraph [0036] with the following amended paragraph:

[0036] As mentioned above, the bond pad 22 of the present invention is more resistant to removal of the bond pad material during probing. Accordingly, more of the bond pad 22 is present at the time of wirebond interconnection 38 formation. As a result, a better interconnection 38 is formed, therefore, a greater force is needed to break the interconnection 38 during the ball shear test and the stud pull test. Additionally, the material selected for the first layer 18 of the bond pad 22 has a higher ~~Young's Modulus~~ Young's Modulus of Elasticity and hardness than the aluminum in the second layer 20. This also increases the resistance of the bond pad 22 and the interconnection 38 to the forces applied to the interconnection 38 during the mechanical tests. Furthermore, because the bond pad 22 is more resistant to removal during probe testing, there is less excess bond pad material on the probe tip. This reduces the necessity to clean the probe tip as frequently, thereby minimizing production delays.